What is claimed is:

1. A method for automatically designing a catalog for a plurality of items using a computer system, the method comprising the steps of:

    a. estimating relationship between placement of an item in a catalog and corresponding user responses, the user responses being obtained from transaction history;

    b. determining an optimized position for each item using the estimated relationships; and

    c. forming a catalog with the items being placed at the determined optimized positions.

2. The method as recited in claim 1 further comprising the steps of:

    a. deploying a plurality of initial catalogs with different item placements; and

    b. obtaining user responses for the deployed catalogs, wherein the plurality of catalogs refer to different catalogs for different groups of users over the same period of time, or refer to different catalogs for the same group of users over different periods of time, or both the cases.

3. The method as recited in claim 1 wherein the step of estimating relationship between placement of the items in a catalog and corresponding user responses comprises the steps of:

    a. computing item differentials from the user responses; and

    b. computing search costs from the user responses.

4. The method as recited in claim 3 wherein the step of computing item differentials comprises the steps of:

    a. computing the effect of nature of item on user responses; and

    b. computing the effect of nature of item on the user responses for other items in the catalog.

5. The method as recited in claim 3 wherein the step of computing search costs comprises the steps of:

    a. computing the effect of placing an item at a particular position in the catalog on user responses; and

    b. computing the effect of relative positions of items on user responses.

1 6. The method as recited in claim 1 wherein the step of determining an optimized position

2   comprises the steps of:

3   a. modeling a merchant specified objective as an optimization function in terms of item

4   placement, item differentials and search costs; and

5   b. evaluating the optimization function to identify the optimal placement of each item in

6   the catalog.

1 7. A system for automatically designing a catalog for a plurality of items, the system

2   comprising:

3   a. means for estimating relationship between placement of an item in a catalog and

4   corresponding user responses, the user responses being obtained from transaction

5   history;

6   b. means for determining an optimized position for each item using the estimated

7   relationships; and

8   c. means for forming a catalog with the items being placed at the determined positions.

1 8. The system as recited in claim 7 further comprising:

2   a. means for deploying a plurality of initial catalogs with different item placements; and

3   b. means for obtaining user responses for the deployed catalogs, the obtained responses

4   forming the transaction history.

1 9. The system as recited in claim 7 wherein the means for estimating relationship between

2   placement of the items in a catalog and corresponding user responses comprises:

3   a. means for computing item differentials from the user responses; and

4   b. means for computing search costs from the user responses.

1 10. The system as recited in claim 9 wherein the means for computing item differentials

2   comprises:

3   a. means for computing the effect of nature of item on user responses; and

4   b. means for computing the effect of nature of item on the user responses for other items

5   in the catalog.

1 11. The system as recited in claim 9 wherein the means for computing search costs comprises:

2   a. means for computing the effect of placing an item at a particular position in the

3   catalog on user responses; and

4   b. means for computing the effect of relative positions of items on user responses.

1 12. The system as recited in claim 7 wherein the means for determining an optimized position

2   comprises:

3   a. means for modeling a merchant specified objective as an optimization function in

4   terms of item placement, item differentials and search costs; and

5   b. means for evaluating the optimization function to identify the optimal placement of

6   each item in the catalog.

1 13. A computer program product for automatically designing a catalog for a plurality of items, the

2   computer program product comprising:

3   a. program instruction means for estimating relationship between placement of an item

4   in a catalog and corresponding user responses, the user response being obtained from

5   transaction history;

6   b. program instruction means for determining an optimized position for each item using

7   the estimated relationships; and

8   c. program instruction means for forming a catalog with the items being placed at the

9   determined positions.

1 14. The computer program product as recited in claim 13 further comprising:

2   a. program instruction means for deploying a plurality of initial catalogs with different

3   item placements; and

4   b. program instruction means for obtaining user response for the deployed catalogs, the

5   obtained response forming the transaction history.

1 15. The computer program product as recited in claim 13 wherein the program instruction means

2   for estimating relationship between placement of the items in a catalog and corresponding

3   user responses comprises:

4   a. program instruction means for computing item differentials from the user responses;

5   and

6   b. program instruction means for computing search costs from the user responses.

1　16. The computer program product as recited in claim 15 wherein the program instruction means

2　　for computing item differentials comprises:

3　　　　a.　program instruction means for estimating the effect of nature of item on user

4　　　　　responses; and

5　　　　b.　program instruction means for estimating the effect of nature of item on the user

6　　　　　responses for other items in the catalog.

1　17. The computer program product as recited in claim 15 wherein the program instruction means

2　　for computing search costs comprises:

3　　　　a.　program instruction means for estimating the effect of placing an item at a particular

4　　　　　position in the catalog on user responses; and

5　　　　b.　program instruction means for estimating the effect of relative positions of items on

6　　　　　user responses.

1　18. The computer program product as recited in claim 13 wherein the program instruction means

2　　for determining an optimized position comprises:

3　　　　a.　program instruction means for modeling the specified objective as an optimization

4　　　　　function in terms of item placement, item differentials and search costs; and

5　　　　b.　program instruction means for evaluating the optimization function to identify the

6　　　　　optimal placement of each item in the catalog.

1　19. A method for placement of a plurality of items in a catalog, the placement being directed to

2　　achieve a specified objective, the method comprising the steps of:

3　　　　a.　deploying a plurality of initial catalogs with different placements for the plurality of

4　　　　　items;

5　　　　b.　obtaining user responses for the plurality of initial catalogs, wherein the plurality of

6　　　　　catalogs refer to different catalogs for different groups of users over the same period

7　　　　　of time, or refer to different catalogs for the same group of users over different periods

8　　　　　of time, or both the cases;

9　　　　c.　computing catalog parameters from the user responses; and

10　　　　d.　optimizing placement of items in the catalog using the catalog parameters.

1   20. The method as recited in claim 19 wherein the step of computing catalog parameters

2   comprises the steps of:

3   a. computing item differentials from the user responses; and

4   b. computing search costs from the user responses.

1   21. The method as recited in claim 20 wherein the step of computing item differentials comprises

2   the steps of:

3   a. computing the effect of nature of item on user responses; and

4   b. computing the effect of nature of item on the user responses for other items in the

5   catalog.

1   22. The method as recited in claim 20 wherein the step of computing search costs comprises the

2   steps of:

3   a. computing the effect of placing an item at a particular position in the catalog on user

4   responses; and

5   b. computing the effect of relative positions of items on user responses.

1   23. The method as recited in claim 19 wherein the step of optimizing placement of items

2   comprises the steps of:

3   a. modeling a merchant specified objective as an optimization function in terms of item

4   placement, item differentials and search costs; and

5   b. evaluating the optimization function to identify the optimal placement of items in the

6   catalog.

1   24. A method for dynamically optimizing an online catalog, the catalog being designed based on

2   user response data of previously deployed catalogs, the method comprising the steps of:

3   a. computing catalog parameters from user response data;

4   b. modeling a merchant specified objective as an optimization function in terms of

5   placement of item in a catalog and catalog parameters;

6   c. evaluating the optimization function to identify the optimal placement of items in the

7   catalog;

8   d.   forming a catalog with the items being placed at the positions obtained from

9   evaluating the optimization function;

10   e.   deploying the formed catalog; and

11   f.   updating user response data based on response to the deployed catalog,

12   wherein steps a to f are repeated to dynamically update the optimized catalog based on

13   recent user responses.

1   25. The method as recited in claim 24 further comprising the steps of:

2   a.   deploying a plurality of initial catalogs with different placement for the plurality of

3   items; and

4   b.   obtaining user response data for the deployed catalogs, wherein the plurality of

5   catalogs refer to different catalogs for different groups of users over the same period

6   of time, or refer to different catalogs for the same group of users over different periods

7   of time, or both the cases.